REMARKS

[0001] Claims 1-5, 8, 12-17, and 20 are pending. The Office Action mailed September 13, 2006 (hereinafter "Office Action") rejected Claims 1-5, 8, 12-17, and 20 under 35 U.S.C. § 103(a) as being unpatentable by Warthen, U.S. Patent No. 6,584,464 (hereinafter "Warthen") in view of Oyanagi, et al., U.S. Patent No. 4,815,005 (hereinafter "Oyanagi").

REJECTION OF CLAIMS 1-5, 8, 12-17, AND 20 UNDER 35 U.S.C. §103(a)

[0002] The Office Action rejected Claims 1-5, 8, 12-17, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Warthen in view of Oyanagi. The Applicants respectfully traverse this rejection.

[0003] The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. MPEP at § 2142. The prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP at § 2142. In addition, even if all the claim limitations are taught or suggested by the prior art references, there must be some suggestion or motivation to combine reference teachings to establish obviousness. MPEP §2142. Obviousness may be rebutted by showing that "the art, in any material respect, teaches away from the claimed invention." MPEP at § 2144.05.III. The Applicants assert that there is no motivation, suggestion, or teaching in either Warthen or Oyanagi to combine the references. The Applicants also assert that both Warthen and Oyanagi teach away from the Applicants' claimed invention.

[0004] Initially, it may be useful to review the invention described in the Application and the disclosures of the prior art. In general, the Application describes a system and method for identifying objects referenced in a stream of text. Application of Simpson, et al., filed March 7, 2001, Application No. 09/801,340 (hereinafter "Application") at p. 3, ll. 7-9. An input pipeline 116 receives an incoming *stream* of text and a tokenizing module 224 within a text analysis module 204 tokenizes the *stream* of text into individual words. *Id.* at p. 3, ll. 10-11, p. 11, ll. 18-21. A word joiner module 234 in the text analysis module 204 constructs word patterns of one or more consecutive words from the stream of text. *Id.* at p. 12, ll. 10-13, p. 16, ll. 14-18.

[0005] A word comparison module 230 in the text analysis module 204 consults a semantic network to automatically identify one or more word patterns in the incoming stream of text, such that each word in the incoming stream is searched once in the semantic network. *Id.* at p. 11, ll. 21-25, p. 16, ll. 14-16, p. 17, ll. 2-13, Fig. 7. An object association module 220 references a known object within the semantic network based on an identified word pattern from the stream of text, the known object identified by a word pattern of the semantic network. *Id.* at p. 9, ll. 20-22, p. 14, ll. 23-25.

[0006] By contrast, Warthen teaches identifying a known question from a user-provided question and then providing a response to the question in another process. Warthen at Abstract. Warthen teaches a question processing engine ("QPE") 30 that receives a question from a client interface 60. Warthen teaches that the initial user query is a text string. *Id.* at col. 4, ll. 42-46. Warthen teaches that the QPE 30 "processes the question to identify a set of template questions." *Id.* at col. 4, ll. 49-51. The template questions are then presented to the user and the user selects a template question. *Id.* at col. 4, ll. 14-16. An answer processing engine 32 then returns an answer to the user. *Id.* at col. 4, ll. 19-24.

[0007] Warthen does not teach, disclose, or suggest that the initial user query or question is a stream of text. *See generally Warthen.* Warthen does not teach, disclose, or suggest searching words in the incoming stream of text only one time in the semantic network or constructing word patterns of one or more consecutive words from the stream of text. *Id.* Warthen does not teach, disclose, or suggest storing a semantic network as disclosed in the Application, loading the semantic network into RAM memory, or dividing the stream of text into a plurality of threads for concurrent processing. *Id.*

[0008] Oyanagi teaches an improved semantic network that performs high-speed inferential retrieval processing on an artificial intelligence knowledge base system. *See* Oyanagi Col. 2, lines 40-45. Knowledge data is arranged to form a semantic network where the knowledge data includes an object, an attribute, and a value. *Id.* at col. 3, l. 55 to col. 4, l. 6. Oyanagi accomplishes its improvements by storing one knowledge base in main associative memory and specific knowledge data that strictly includes "is-a" attributes in a sub associative

memory. *Id.* at col. 3, ll. 47-54. In response to a question, Oyanagi simultaneously searches the main memory for an object identified in the question and the sub associated memory for an object that has an "is-a" attribute. *See* Oyanagi Col. 5, line 43 - Col. 7, line 3.

Warthen and Oyanagi Do Not Teach, Disclose, or Suggest All of Limitations of Claims 1 & 13

[0009] The Office Action rejects Claims 1 and 13 as being unpatentable over Warthen in view of Oyanagi. Office Action at p. 2. The Office Action states that Warthen discloses "receiving an incoming stream of text" and cites Figure 2 and Claim 2 of Warthen. *Id.* The Applicants disagree.

[0010] Warthen teaches that the initial user query is a text string. *Id.* at col. 4, ll. 42-46. One of skill in the art would recognize that a string of text received by the QPE 30 is not a stream of text, but a discrete and relatively small amount of text. One of skill in the art would easily recognize that a stream of text is a continuous flow of text rather than a single discrete string of text. A stream of text has no defined or determinable end point. Note that the initial user query is a question that is typed by a user. A question connotes a single sentence, which again is a single discrete string of text, not a stream of text. In Warthen, the initial user screen 80 presented to a user includes only a single line 82 for typing a question. *Id.* at Fig. 2. Such an arrangement suggests that a question is to be kept short. The Applicants assert that Warthen does not teach an incoming stream of text, as required in Claims 1 and 13.

[0011] The Office Action states that Warthen discloses "constructing word patterns of one or more consecutive words from the stream of text" and cites Figure 4, element 114, Figure 5, element 130, column 8, lines 12-15 and 27-29 presumably of Warthen. The Applicants disagree. Figure 4 of both Warthen and Oyanagi do not contain an element 114. *See* Warthen, Fig. 4, Oyanagi, Fig. 4. Warthen and Oyanagi do not even include the number 114. *See generally* Warthen, Oyanagi. Figure 5 of both Warthen and Oyanagi do not contain an element 130. *See* Warthen, Fig. 4, Oyanagi, Fig. 4. Warthen and Oyanagi do not even include the number 130. *See generally* Warthen, Oyanagi.

[0012] Column 8, lines 12-15 of Warthen include a portion of Claim 8 which reads: "8. The method of claim 7, further comprising: tokenizing the initial user query into a list of words; generating a syntactic structure from the list of words; reducing the syntactic structure to a canonical syntactic structure." Warthen at Claim 8, col. 8, ll. 12-15. Nothing in Claim 8 discusses constructing word patterns of one or more *consecutive* words from the *stream* of text. Column 8, lines 27-29 do not exist in Warthen. Column 8, lines 12-15 and 27-29 of Oyanagi cite a portion of Claim 1 and do not have anything to do with constructing word patterns of one or more consecutive words from the stream of text.

[0013] With regard to treatment of the initial user query, Warthen teaches that a "Tokenizer 150 converts the initial user query into a list of words and provides the list to parser 155." Converting a query into a *list* of words is not equivalent to constructing word patterns or constructing the word patterns from one or more *consecutive* words from the *stream* of text. The Applicants respectfully assert that Warthen and Oyanagi do not teach construction word patterns of one or more *consecutive* words from the *stream* of text as recited in Claim 1.

[0014] The Office Action states that Warthen discloses "consulting a semantic network to automatically find a match between one or more word patterns in the incoming stream of text and a word pattern in the semantic network, such that each word in the incoming stream is searched once in the semantic network" and cites Claim 3 of Warthen. Office Action at p. 3. The Applicants disagree. In particular, the Office Action states that "'consulting a semantic network' corresponds to 'matching the query with the semantic network' and cites column 6, lines 64 to 67 of Warthen.

[0015] The semantic network taught by Warthen is not equivalent to the semantic network of the Application. The semantic network of Warthen is a network of synonyms used to rephrase an initial user query into a template question. Warthen at Figs. 6-8, col. 5, l. 45 to col. 6, l. 14 ("Normalizer 160 reforms the syntactic structures into canonical forms by replacing synonyms with a canonical term. . . . Normalizer 160 uses a semantic map, a small portion of which is shown in FIG. 6, to perform the canonical reduction."). The semantic network of Warthen is configured to *replace* a word in a question with a synonym. *Id.*

[0016] The semantic network 400 described in the Application is configured to compare an individual word and an adjacent word of the stream of text to a word pattern in the semantic network 400 to find a word pattern involving the word. Application at p. 4, ll. 9-11. The semantic network 400 of the Application is configured to link adjacent words in a phrase into word patterns. *Id.* at Fig. 4, p. 8, ll. 7-15, p. 9, ll. 4-14. The semantic network 400 of the Application may also link aliases, such as an acronym, to an object. *Id.* at p. 10, ll. 1-6. A semantic network configured to link words into word patterns for searching consecutive words in a stream of text is not equivalent to a semantic network of synonyms for replacing words in a question to derive template questions.

[0017] The Office Action agrees that Warthen does not teach searching each word of the incoming stream of text once. Office Action at p. 4. The Applicants agree. The Office Action suggests that Oyanagi teaches searching each word of the incoming stream of text once and cites column 5, lines 4-41 of Oyanagi. The Applicants disagree.

[0018] As in Warthen, Oyanagi teaches analysis of a question, not analysis of a stream of incoming text. Oyanagi at col. 5, ll. 14-18. In particular, the question must have, or imply, an "object-attribute-value" form. *Id.* at col. 5, ll. 3-28. In contrast, a stream of text has an arbitrary form by definition. Accordingly, each word of the incoming stream is searched. In contrast, Oyanagi fails to search each word. *Id.* at col. 5, ll. 3-13. For example, the words "does" and "what" in the questions in Oyanagi are not searched against the semantic network. *Id.* In addition, Claims 1 and 13 recite that each word is searched only once. While Oyanagi teaches a search of one or more cycles, the search does not include each word and does not include words from a stream of text. *Id.* at col. 5, l. 3 to col. 7, l. 3.

[0019] The Office Action implies that completing a search in one cycle, as disclosed in column 5, lines 4-41 of Oyanagi, is equivalent to searching each word of the incoming stream of text. Office Action at p. 4. Applicants disagree. The examples of a one cycle search cited in column 5, lines 4-41 of Oyanagi are merely chance because the query searched was provided in the particular form. Oyanagi at col. 5, ll. 4-28 ("Does CLYDE own NEST1?" and "What does CLYDE own?" are searched in one cycle.) Oyanagi also teaches that queries of a different form

are completed in several cycles. *Id.* at col. 5, l. 49 to col. 7, l. 3. The question "What does CLYDE have?" requires several cycles of a search to be completed. *Id.* Thus Oyanagi teaches searches of various numbers of cycles dependent on the form of the query. Oyanagi has rigid requirements for the form of the query. Oyanagi does not disclose "searching each word of the incoming stream of text once." The Applicants respectfully assert that Warthen and Oyanagi do not teach or disclose all of the limitations of Claims 1 and 13.

There is No Suggestion or Motivation to Combine Warthen and Oyanagi

[0020] As stated above, even if all the claim limitations are taught or suggested by the prior art references, there must be some suggestion or motivation to combine reference teachings to establish obviousness. MPEP §2142. In order to combine elements of separate patents, there must be some suggestion of the combination in the patents. *Panduit Corp. v. Dennison Manufacturing Co.*, 1 USPQ2d 1593 (Fed. Cir. 1987). There must be some positive, concrete evidence which gives a logical reason that justifies a combination of primary and secondary references. *In re Laskowski*, 10 USPQ2d 1397 (Fed. Cir. 1989). The Office Action suggests that because Warthen teaches "that the invention can be embodied in any number of different types of systems and executed in any number of different ways, as would be known by one ordinary skill in the art [sic]" (citing Warthen at col. 2, ll. 45-48) that this provides motivation to combine Oyanagi and Warthen. Office Action at pp. 4-5. The Applicants disagree.

[0021] The text cited from Warthen is mis-quoted in the Office Action. The cited text in Warthen reads: "The following description describes some embodiments of the invention and these examples are not intended to limit the scope of the invention, which is defined by the attached claims." Warthen at col. 2, ll. 45-48. As can be clearly seen by reading the actual text in Warthen, the citation only teaches that the embodiments described are not limiting, but the invention is defined by the claims. The quotation does not mention that the invention can be embodied in *any* number of different types of systems or executed in *any* number of different ways. In addition, such a general, vague statement would not lead one of skill in the art to Oyanagi because there is nothing in the statement to point to anything taught in Oyanagi or to

make changes in Warthen that would lead to Oyanagi. The courts require some positive, concrete evidence which gives a logical reason that justifies a combination of primary and secondary references. *In re Laskowski*, 10 USPQ2d 1397 (Fed. Cir. 1989). The general statement cited in the Office Action from Warthen does not provide positive, concrete evidence to justify a combination. The Applicants respectfully assert that Warthen and Oyanagi do not provide any motivation or suggestion to combine the references and that Claims 1 and 13 are in condition for allowance.

Warthen and Oyanagi Teach Away From the Claimed Invention

[0022] "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant." *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966).

[0023] Warthen teaches a semantic network, parser 155, and normalizer 160 that search an initial user *query* for a syntactic structure and then replace synonyms in the syntactic structure. Warthen at col. 5, ll. 36-56. Oyanagi teaches a semantic network in an "object-attribute-value" structure where words are related by an "is-a," "has," or "owns" relationship. Oyanagi at col. 3, l. 66 to col. 4, l. 24. Both teach away from a semantic network of word patterns for matching word patterns comprising consecutive words of an incoming stream of text, as recited in Claims 1 and 13. The Applicants respectfully assert that both Warthen and Oyanagi teach away from the limitations of Claims 1 and 13 and that Claims 1 and 13 are in condition for allowance.

Claims 3 and 15

[0024] The Office Action states that Warthen and Oyanagi disclose "dividing the stream of text into a plurality of threads and conducting the step of consulting . . . word patterns." The Applicants disagree. The Office Action states that Warthen "teaches that the query is divided

into keys, and each key is searched using database pattern," citing column 5, lines 26-67 of Warthen, and that this operation corresponds to "dividing the stream of text into plurality of threads." The word "key" does not exist in the column 5, lines 26-67 of Warthen. The cited text does not describe anything like a searching a key using a database pattern. The cited text describes a tokenizer 165 that divides a query into a list of words, a parser 155 that identifies a set of possible syntactic structures that could be represented by the query, and a normalizer 160 that reforms the syntactic structures into canonical forms by replacing words with synonyms. Warthen at col. 5, ll. 26-67. There is no mention of the tokenizer 165, the parser 155, or the normalizer 160 executing concurrently.

[0025] "Thread" is a term of art meaning "... a program that can execute independently of other parts. Operating systems that support multithreading enable programmers to design programs whose threaded parts can execute concurrently." http://www.webopedia.com/TERM/t/thread.html. The incoming stream of text is divided and allocated to different threads for execution concurrently. Application at p. 6, ll. 24-26, p. 13, ll. 8-13. Warthen and Oyanagi do not teach any kind of division of incoming text into threads for multiple processing and the Office Action's citations proposed as evidence do not discuss anything relating to §the limitations of Claims 3 and 15. The Applicants assert that the cited text in Warthen does not correspond to "dividing the stream of text into a plurality of threads." *See* Application, Claims 3, 15.

[0026] The Office Action states that Oyanagi "teaches that a plurality of processing are executed" and cites column 5, line 44 to column 6, line 23 of Oyanagi. The Applicants disagree. While Oyanagi does teach parallel processing in the main associative memory 14 and sub associative memory 20, the processing is in no way analogous to the limitation of Claims 3 and 15. Oyanagi teaches that *one* query, in this case "What does CLYDE have?" is executed in both memories 14, 20. *Id.* at col. 5, ll. 44-51. The processes executed in the memories 14, 20 are different so that no results are returned from searching the main associative memory 14 while "CLYDE is-a ROBIN" are returned from the sub associative memory 20. *Id.* at col. 5, ll. 51-54. Searching in two memories 14, 20 using one query (What does CLYDE have?) is not analogous

to dividing an incoming stream of text into a plurality of threads and then concurrently consulting a semantic network for each thread.

[0027] In addition, the Office Action ignores the further limitation of Claims 3 and 15 to examine "groups of words spread over adjacent threads at the boundaries of the threads for word patterns." "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). *MPEP* §2143.03. Rejection is not proper if all of the limitations are not present in the prior art. The Applicants assert that Warthen and Oyanagi do not include all of the limitations of Claims 3 and 13, that Warthen column 5, lines 26-67, and the parallel processing of a single query of Oyanagi using different processes do not read on the limitations of Claims 3 and 15. The Applicants assert that Claims 3 and 15 are in condition for allowance.

Claims 5 and 17

[0028] The Office Action states that Warthen and Oyanagi disclose "examining words in the stream of text in a sequential order as the words are received" and cites column 2, lines 3-8 of Oyanagi as evidence. Office Action at p. 6. The Applicants disagree. The cited text reads: "With this arrangement, assuming that a question "What does CLYDE have?" is input and the question is answered, if only knowledge data teaching "BIRD has WING" is prepared in the associative memory, the **following** inferential retrieval must be sequentially performed for the associative memory:" Oyanagi at col. 2, ll. 3-8 (emphasis added). What follows are six steps of a process. *Id.* at col. 2, ll. 9-25. The cited text only states that the steps must be performed sequentially. This has nothing to do with "examining words in the stream of text in a sequential order as the words are received." *See* Application at Claims 5 and 17. The Applicants assert that Claims 5 and 17 are in condition for allowance.

[0029] The Applicants respectfully assert that Claims 1 and 13 are in condition for allowance. Similarly, the Applicants assert that the arguments in favor of Claims 1 and 13 are equally applicable to Claim 12 and so Claim 12 is in condition for allowance. Claims 2-5, 8-11, 14-17, and 20-22 depend on Claims 1 and 13. Because Claims 1, 13 are not obvious in relation

to Warthen and Oyanagi, the Applicants respectfully assert that Claims 2-5, 8-11, 14-17, and 20-22 are similarly in condition for allowance because they depend from allowable claims. See, *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

[0030] Should additional information be required, the Examiner is respectfully asked to notify the Applicants of such need. If any impediments to the prompt allowance of the claims can be resolved by a telephone conversation, the Examiner is respectfully requested to contact the undersigned.

Respectfully submitted,

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